

ANTELOPE-BRAZIL COMPLEX WATERSHED REPORT



Paulo Fishing Reservoir

Executive Summary

This document is an assessment of the rangeland health in the Antelope-Brazil Watershed in south Valley County, Montana. The document also addresses cultural resources. This resource was included to determine if there are conflicts or significant resource issues

that need to be considered during the development of the recommended actions. The table below summarizes rangeland health assessments and recommended actions by grazing allotment.

| Allotment # & Name | Are Healthy Rangelands Standards Being Met? | | | | Is livestock grazing a significant factor in allotment not meeting standards? | Narrative Explanation and Recommended Actions |
|------------------------------|---|--------------------------------|---------------|-------------------------|---|---|
| | Upland | Riparian*/ Wetland • | Water quality | Wildlife/ Bio-diversity | | |
| 4511 Kent Coulee | Yes | Riparian – NA Wetland – Yes | Yes | Yes | NA | No changes recommended. |
| 4515 | Yes | Riparian – NA Wetland – NA | NA | Yes | NA | No changes recommended. |
| 4517 Westfork Ash Coulee | Yes | Riparian – NA Wetland - NA | NA | Yes | NA | No changes recommended. |
| 4518 Ash Coulee | Yes | Riparian – NA Wetland - Yes | Yes | Yes | NA | No changes recommended. |
| 4520 McGregor Coulee | Yes | Riparian – NA Wetland – NA | NA | Yes | NA | No changes recommended. |
| 4521 Upper Buffalo Coulee | Yes | Riparian – NA Wetland - Yes | Yes | Yes | NA | No changes recommended. |
| 4523 Lower Buffalo Coulee | Yes | Riparian – NA Wetland – NA | NA | Yes | NA | No changes recommended. |

• The number of water sources (wetlands) is based on the reservoirs, potholes and springs with water rights in each allotment as addressed in the JVP-RMP.

*Abbreviations: PFC = Proper Functioning Condition, FAR = Functioning at Risk, NA = Not Applicable.

| Allotment # & Name | Are Healthy Rangelands Standards Being Met? | | | | Is livestock grazing a significant factor in allotment not meeting standards? | Narrative Explanation and Recommended Actions |
|----------------------------------|---|---|---------------|-------------------------|---|---|
| | Upland | Riparian*/ Wetland• | Water quality | Wildlife/ Bio-diversity | | |
| 4524 Upper Hay Coulee | Yes | Riparian – NA Wetland – NA | NA | Yes* | NA | *Areas where crested wheatgrass grows does not meet the biodiversity standard on a site basis. No changes recommended. |
| 4532 | Yes | Riparian – NA Wetland – NA | NA | Yes | NA | No changes recommended. |
| 4533 Upper Antelope Creek | Yes | Riparian – NA Wetland – Yes | Yes | Yes | NA | No changes recommended. |
| 4534 Northfork Antelope | Yes | R-1 N.F. Antelope PFC R-2 Hardscrabble PFC Wetland - Yes | Yes | Yes | NA | Maintain grassland habitat for sensitive bird species. Continue herbicide control and monitor for leafy spurge on Hardscrabble Creek. |
| 4535 Southfork Antelope Creek | Yes | R-283 N.F. Antelope PFC R-535 S.F. Antelope PFC R-282 N. section of S.F. Antelope PFC Wetland – Yes | Yes | Yes | NA | Maintain current grazing system. Continue to monitor for leafy spurge near Shearing Pen Reservoir. Monitor sage grouse leks and assess with the guiding principles of the Montana Sage Grouse Plan. |

| Allotment # & Name | Are Healthy Rangelands Standards Being Met? | | | | Is livestock grazing a significant factor in allotment not meeting standards? | Narrative Explanation and Recommended Actions |
|----------------------------------|---|---|---------------|-------------------------|---|---|
| | Upland | Riparian*/ Wetland* | Water quality | Wildlife/ Bio-diversity | | |
| 4536 Traux Coulee | Yes | Riparian –NA Wetland - NA | NA | Yes | NA | Consider constructing a cross-fence to split public and private lands. |
| 4537 Lower Northfork Antelope | Yes | R-1 N.F. Antelope Crk PFC Wetland – Yes | Yes | Yes | NA | Change current grazing schedule on term permit to conform with operator's schedule, June 15 – October 30. A possible experimental site to measure sage grouse habitat. |
| 4538 Lower Hardscrabble Creek | Yes | R-506 Antelope Crk PFC Wetland – Yes | Yes | Yes | NA | Evaluate sagebrush and maintain or develop sage grouse habitat. |
| 4539 Hardscrabble Creek | Yes | R-284 Bob Coulee PFC R-285 Hardscrabble Crk PFC Wetland – Yes | Yes | Yes | NA | Monitor and manage sage grouse habitat. Continue late season grazing (June). |

| Allotment # & Name | Are Healthy Rangelands Standards Being Met? | | | | Is livestock grazing a significant factor in allotment not meeting standards? | Narrative Explanation and Recommended Actions |
|------------------------------|---|---|---------------|----------------------------|---|---|
| | Upland | Riparian*/ Wetland · | Water quality | Wildlife/ Bio-diversity | | |
| 4540 Hay Coulee | Yes | Riparian – NA Wetland – FAR (VR-21) | Yes | Yes | NA | Maintain current grazing management. Monitor chisel plow areas and the effects on sagebrush and annual forbs. Repair the trickle pipe on VR-21. Maintain and/or develop waterfowl habitat. |
| 4541 Lower Hay Coulee | Yes | Riparian – NA Wetland – Yes | Yes | Yes | NA | No changes recommended. |
| 4542 Antelope Creek | Yes | R-521 Bob Coulee PFC R-87 Antelope Creek PFC | Yes | Yes | NA | No changes recommended. |
| 4543 Lower Antelope Creek | Yes | Riparian – NA Wetland – Yes | Yes | Yes* | NA | *Areas where crested wheatgrass grows does not meet biodiversity on a site basis. No changes recommended. |
| 4544 | Yes | Riparian – NA Wetland - NA | NA | Yes | NA | No changes recommended. |

| Allotment # & Name | Are Healthy Rangelands Standards Being Met? | | | | Is livestock grazing a significant factor in allotment not meeting standards? | Narrative Explanation and Recommended Actions |
|----------------------------------|---|--|---------------|-------------------------|---|---|
| | Upland | Riparian*/ Wetland• | Water quality | Wildlife/ Bio-diversity | | |
| 4553 Brazil Creek | Yes | OP-2 Brazil Creek PFC OP-1 S.F. Brazil PFC Wetlands – Yes | Yes | Yes | NA | Monitor and map utilization in allotment. Revise AMP to reflect the changes made in AUMs. Monitor sage grouse leks and assess with the guiding principles of the Montana Sage Grouse Plan. |
| 4554 Lower Southfork Antelope | Yes | OP-1 S.F. Antelope FAR R-554 N.F. Antelope PFC Wetland- No | Yes | Yes | No | Riparian condition is not livestock caused, rather due to the saline content. Continue to monitor this site. Continue current grazing system with allotment #4601. |
| 4555 Bullock Coulee | Yes | Riparian – NA Wetland – Yes | Yes | Yes | NA | Implement a cross fence to improve livestock distribution and utilization. |
| 4556 Hay Fever | Yes | Riparian – NA Wetland – Yes | Yes | Yes | NA | Develop waterfowl ponds. |
| 4557 Second Brazil Creek | Yes | Riparian – NA Wetland – Yes | Yes | Yes | NA | Maintain current grazing system. Potential sage grouse viewing area on the RR spur. |

| Allotment # & Name | Are Healthy Rangelands Standards Being Met? | | | | Is livestock grazing a significant factor in allotment not meeting standards? | Narrative Explanation and Recommended Actions |
|--------------------------------|---|--|---------------|-------------------------|---|---|
| | Upland | Riparian*/ Wetland• | Water quality | Wildlife/ Bio-diversity | | |
| 4558 Wirenet Corral Pasture | Yes | R-558 Brazil Creek PFC Wetland - NA | Yes | Yes | NA | Monitor saline seep below Paulo Reservoir. |
| 4559 | Yes | R-322 Brazil Creek PFC Wetland - NA | Yes | Yes | NA | Continue current late fall grazing season. |
| 4560 Lower Brazil Creek | Yes | R-83 Brazil Creek PFC Wetland - Yes | Yes | Yes | NA | Develop waterfowl ponds. Consider developing an AMP to improve saline seeps and heavy utilization along Bentonite County Road. |
| 4561 Homestead Pasture | Yes | R-83 Brazil Creek PFC Wetland – Yes | Yes | Yes | NA | No changes recommended. |
| 4562 Little Brazil Creek | Yes | Riparian – NA Wetland – NA | NA | Yes | NA | No changes recommended. |
| 4563 Coyote Creek | Yes | R-220 Little Brazil Crk FAR Wetland – Yes | Yes | Yes | No | Riparian condition is not livestock caused, but attributed to a large rain/hail event. Maintain current grazing system. |
| 4564 Alkali Creek | Yes | R-84 Brazil Creek PFC Wetland – Yes | Yes | Yes | NA | Develop waterfowl ponds. Revise grazing season on term permit to 3/1-2/28 season. |

| Allotment # & Name | Are Healthy Rangelands Standards Being Met? | | | | Is livestock grazing a significant factor in allotment not meeting standards? | Narrative Explanation and Recommended Actions |
|-----------------------------|---|---|---------------|-------------------------|---|---|
| | Upland | Riparian*/ Wetland• | Water quality | Wildlife/ Bio-diversity | | |
| 4565 Theofiel Coulee | Yes | Riparian – NA Wetland - NA | NA | Yes | NA | No changes recommended. |
| 4566 | Yes | Riparian – NA Wetland - NA | NA | Yes | NA | No changes recommended. |
| 4601 North Little Beaver | Yes | R-324 S.F. Brazil Crk PFC Wetland – NA | Yes | Yes | NA | Maintain current grazing season with allotment #4554. |

- The number of water sources (wetlands) is based on the reservoirs, potholes and springs with water rights in each allotment as addressed in the JVP-RMP.

*Abbreviations: PFC = Proper Functioning Condition, FAR = Functioning at Risk, NA = Not Applicable.

The issue of scale must be kept in mind in evaluating each standard. It is recognized that isolated sites within a landscape may not be meeting the standards; however, broader areas must be in proper functioning condition. No single indicator provides sufficient information to determine rangeland health. They are used in combination to provide information necessary to determine rangeland health.

The following allotments; Upper Hay Coulee Allotment (4524) and Lower Antelope Creek (4543) are dominated by crested wheatgrass and do not meet the wildlife/biodiversity standard. The standard requires a diversity of native plant species. Even though these allotments do not meet the standard, these areas provide a unique habitat for, Baird's sparrow, sensitive specie. Thus,

on a larger scale, the limited acreage of crested wheatgrass does contribute to the overall biodiversity in the watershed.

The following allotments; Hay Coulee (4540), Lower Southfork Antelope (4554), and Coyote Creek (4563) Allotment did not meet the riparian/wetland standard. In allotment 4540, the reservoir VR-21 (wetland) was rated as FAR due to the eroded trickle pipe. The Lower Southfork Antelope and Coyote Creek Allotments failed to meet the riparian standard. These were not livestock caused. The high saline content was the major contributing factor on Southfork Antelope Creek. Little Brazil Creek in Coyote Creek also failed the riparian standard, this was a result of a large rain/hail event, and therefore there was active lateral cutting at the time of the site assessment.

Before any of the above recommendations could be implemented on these site-specific areas further environmental analysis will be completed. Implementation is contingent upon staffing to complete the analysis and adequate construction funding.

Based on my review of the Assessment Team's recommendation and other relevant data and information, I have determined that the allotments in the Brazil – Antelope Watershed meet the Standards for Rangeland Health and Guidelines for Grazing Management for BLM lands in Montana except allotments; Upper Hay Coulee (4542),

Lower Antelope (4543), Hay Coulee (4540), Lower Southfork Antelope (4554), and Coyote Creek (4563) as noted above in the Executive Summary table.

The people involved in the above assessments were David Waller, Wildlife Management Biologist, Stephen Klessens, Rangeland Management Specialist, Raymond Neumiller, Rangeland Management Specialist, Jennie Jennings, Hydrologist, Beth Klempel, Natural Resource Specialist, and John Fahlgren, Assistant Field Manager. Detailed data for each allotment is available at the Glasgow Field Station upon request.

Authorized Officer Determination:

SIGNATURE:



Bruce Reed

DATE:



TITLE:



Field Manager



GLASGOW FIELD STATION

<http://www.mt.blm.gov/mafo/index.html>

GLASGOW, MONTANA

ANTELOPE – BRAZIL COMPLEX WATERSHED REPORT

September 2003

Brazil – Antelope Complex Watershed Report

Introduction

This document is an assessment of the public lands in the Brazil – Antelope watershed area, and the effect of livestock grazing on current rangeland health. Current conformance with the grazing management decisions set forth in the Judith – Valley- Phillips Resource Management Plan (Land Use Plan) and the Lewistown District standard for Rangeland Health is documented.

Cultural resources are also addressed. These resources were included to determine if there are conflicts or significant resource issues that need to be considered during the development of the recommended actions.

The watershed area includes all of the public lands within the Brazil Creek and Antelope Creek watersheds. The watershed area boundary (see Map 1) follows allotment boundaries, including grazing allotments that are partially within the watershed. There are 83,407 acres of public lands and 34,173 acres of private and state land in the grazing allotments. This report addresses only BLM administered public lands within the watershed. There are 13,426 animal-unit months (AUMs) of livestock forage allocated on public lands and approximately 5,510 AUMs on other lands.

BLM has worked cooperatively with individual permittees in the watershed for many years to develop Allotment Management Plans (AMPs) to improve

range condition and grazing management. The land use plan established that decisions be implemented on a watershed basis, a broader ecosystem is considered, and more consistent management is applied. It is BLM's intent to implement watershed management cooperatively. Our policy is to grant grazing permittees who agree to monitor riparian and other objectives more autonomy in management.

This report documents conditions and contains recommendations and objectives that will guide future decisions in the watershed. The focus of the recommendations is grazing management. Once this report is final there will be changes made, where warranted, in grazing management according to the decisions made in the Judith – Valley – Phillips Resource Management Plan and the Lewistown District Standards for Rangeland Health. After consultation and coordination with the permittees and other interested parties, the site specific decisions concerning terms and conditions for each allotment will be provided prior to issuance of new grazing permits. As with all similar BLM decisions, affected parties will have an opportunity to appeal these decisions. Environmental analysis will be completed prior to any surface disturbing activity, in accordance with the National Environmental Policy Act.

This document will address 4 steps;

1) Issues and Key Questions, this section lists the relevant decisions from the RMP and the applicable Standard, and key questions that relate to the issue, 2) Characterization/Current Conditions, this section describes the current conditions at the time of the assessment, 3) Reference Conditions, this section describes the condition that existed when the land was surveyed in the late 1800s and early 1900s, and 4) Analysis and Recommendations, this section will explain the standard, describe the procedure to determine the standard, list

the findings and give recommendations.

Each step will be addressed in these 4 standards, upland health, riparian/wetland, water quality and wildlife habitat/biodiversity. Standards are statements of physical and biological conditions or degree of function required for healthy sustainable rangelands.

Healthy rangeland standard # 4, Air Quality, meets the Montana State standard and is not addressed in this document.

UPLANDS

Step One: Issues and Key Questions

Upland Health

RMP Decisions:

- a) “The overall vegetative objective is to improve or maintain the ecological status of BLM land to achieve a plant community of good or excellent ecological condition on 80% of BLM land within 15 years of implementation of activity plans.” Objectives must be biologically and economically feasible and can be lower than good or excellent condition if needed for specific wildlife habitat.
- b) “The BLM will maintain and/or improve soil productivity by increasing vegetation cover and reducing erosion.”

Key Questions:

Clubmoss: Clubmoss infestations have reduced vegetative production far below potential. Do we mechanically treat to increase production and advance seral stage from fair to good to meet 80% good land use plan objective? What are the tradeoffs in habitat values?

Noxious weeds: What type of program is needed to ensure that leafy spurge does not expand and to prevent other noxious weeds from become a problem?

Step Two: Characterization/ Current Conditions

Upland Health

Soils

The array and landscape pattern of soils and vegetation in the watershed area is mainly a function of climate, geology, and time. Our monitoring studies have shown that current grazing management has a relatively minor influence.

Soils in most of the area are derived from a mixture of glacial till and Bearpaw shale. Big sagebrush is the dominant species with western wheatgrass, blue grama, needle-and-thread, prairie junegrass, and sandberg bluegrass as the main understory plants. These are dense clay and clay pan ecological sites affected by soil chemistry. They are mostly mid seral and have very limited potential to advance in succession. The Bearpaw shale soils are dominated by prairie sandreed, little bluestem, western wheatgrass and big sagebrush. They are clayey, shallow clayey and coarse clayey sites, which are moderately productive and will advance in succession much more rapidly than most sites in the area. Most are high seral. They are also the most potentially erosive sites and where noxious weeds are most likely to spread. The northwest portion of the watershed has sandstone derived soils dominated by grasses including; little bluestem, prairie sandreed, western wheatgrass, needle-and-thread and prairie junegrass.

Riparian soils and overflow ecological sites next to the streams are classified as ustic torrifluvents in the Valley County

soil survey. These soils respond readily to grazing management change.

Vegetation

The vegetation data shows that 91 % of the surveyed area is dominated by native vegetation; 23 % grass, 68 % shrubs (61% sagebrush, 7% juniper), while 9 % is dominated by the introduced species, crested wheatgrass. See maps 3 and 4 (pages 36-37) for the vegetation type and seral status of the Antelope-Brazil Watershed.

Clubmoss

Clubmoss covers many of the soils in this area and severely limits vegetative productivity and potential to advance in seral status. Fire or mechanical treatment of clubmoss significantly increases productivity and speeds succession. Two chiseling projects have been completed in this watershed, totaling 1440 acres. The chiseling project in Coyote Creek Allotment (#4563) was completed in 2 stages; 1989 and 1994. The second project took place in 1994 in the Hay Coulee Allotment (#4540). Both projects were successful as grass production increased and sagebrush density was maintained.

Noxious Weed Infestations

Leafy Spurge infestations are in minor amounts on Hardscrabble Creek and Antelope Creek. Since 1984, BLM has been involved in cooperative control efforts with Valley County and the Cooperative State Grazing Districts. Throughout this period the goal has been to eradicate leafy spurge and to prevent other noxious weeds in the Antelope – Brazil Creek Watershed. Herbicide

treatments are being applied to the areas mentioned. In 2002 less than an acre of leafy spurge was treated on Hardscrabble Creek and only about 2 acres on Antelope Creek. These areas will continue to be monitored and treated to control the aggressive and to obtain our goal of eradication.

Livestock Grazing

There are 27 individual ranches that have grazing permits in the watershed.

BLM lands provide about 70% of the summer forage in the allotments.

About 69% of the federal land in the watershed is managed under 8 allotment management plans (AMPs) which require rest rotation or deferred rotation grazing as shown below, Table 1. Seventeen allotments (29% of the BLM acres) are identified in the land use plan as potential AMPs. The remaining allotments (2% of the BLM acres) are in small allotments that are identified as non-AMPs in the land use plan.

| Table 1. Livestock Grazing Allocation and Management | | | | | |
|---|---|---------------------|----------------------|------------------------|-------------------------------------|
| ALLOTMENT # & NAME (AMP STATUS) | PERMITTEE | BLM AUMs | BLM ACRES | OTHER ACRES | GRAZING METHOD /YEAR |
| 4511 KENT COULEE (PT) | OPHUS BROTHERS | 54 | 508 | 0 | S |
| 4515 (PT) | ALBUS LOREN AND SANDRA | 76 | 320 | 0 | S |
| 4517 WESTFORK ASH COULEE (N) | ALBUS LOREN AND SANDRA | 116 | 640 | 0 | S |
| 4518 ASH COULEE (PT) | DIX, LEE AND GLENDA | 172 | 750 | 0 | S |
| 4520 MCGREGOR COULEE (N) | BOUCHER RANCH INC. | 20 | 120 | 0 | S |
| 4521 UPPER BUFFALO COULEE (PT) | WILLIAM KUKI | 138 | 720 | 0 | S |
| 4523 LOWER BUFFALO COULEE (N) | TERRY L. MONTFORT | 71 | 320 | 0 | S |
| 4524 UPPER HAY COULEE (N) | SEVER ENKERUD | 9 | 40 | 0 | S |
| 4532 (N) | HUGH K. BROOKIE | 36 | 160 | 0 | S |
| 4533 UPPER ANTELOPE CREEK (PT) | BI LO JI FARMS, INC. | 456 | 1800 | 2279 | S |
| 4534 NORTHFORK ANTELOPE (PT) | BOUCHER RANCH, INC. | 504 | 2420 | 2540 | S |
| 4535 SOUTHFORK ANTELOPE CREEK (E) | ALBUS, R. LORAN AND SANDRA L., HUGH K. BROOKIE, FJELD, GIFFORD & KAY, CORBY A. PALM, HOWARD PORTER | 1275 | 9338 | 1276 | DR/1988 |
| 4536 TRUAX COULEE (N) | MICHAEL JONES | 405 | 2094 | 0 | S |

| ALLOTMENT # & NAME | PERMITTEE | BLM AUMs | BLM ACRES | OTHER ACRES | GRAZING METHOD /YEAR |
|------------------------------------|--|--------------|--------------|----------------|----------------------------|
| 4537 LOWER NORTHFORK ANTELOPE (PT) | ROBERT H. COTTON | 420 | 2280 | 0 | S |
| 4538 LOWER HARDSCRABBLE (PT) | ELLETSON, D & J AND KALINSKI, J | 229 | 1160 | 688 | S |
| 4539 HARDSCRABBLE CREEK (E) | GRASSLAND TRUST | 480 | 2282 | 1080 | DR/1992 |
| 4540 HAY COULEE (E) | MOLVIG, RICHARD C. AND ROBERT E. | 571 | 3236 | 2800 | DR/1992 |
| 4541 LOWER HAY COULEE (PT) | CAROLYN MUGGLI | 97 | 570 | 320 | S |
| 4542 ANTELOPE CREEK (PT) | DOROTHY BILLINGSLEY | 801 | 4633 | 9064 | S |
| 4543 LOWER ANTELOPE CREEK (PT) | DONALD R. JONES | 84 | 480 | 0 | S |
| 4544 (N) | MOLVIG, RICHARD C. AND ROBERT E. | 14 | 80 | 415 | S |
| 4553 BRAZIL CREEK (E) | LEE DIX, PUTZ TRUST ESTATE, JMC PARTNERSHP WESEN, UPHAUS, WILLIAM JR | 3498 | 26593 | 5269 | DR/1987 |
| 4554 LOWER SOUTHFORK ANTELOPE (E) | DOROTHY BILLINGSLEY | 483 | 3342 | 240 | RR/1988 |
| 4555 BULLOCK COULEE (PT) | DONALD R. JONES | 299 | 2016 | 795 | S |
| 4556 HAY FEVER (PT) | JMC PARTNERSHP WESEN | 101 | 660 | 635 | S |
| 4557 SECOND BRAZIL CREEK (E) | CHERYL UPHAUS | 665 | 3073 | 1779 | DR/1990 |
| 4558 WIRENET CORRAL PASTURE (PT) | UPHAUS, WILLIAM JR | 111 | 568 | 0 | S |
| 4559 (PT) | PUTZ TRUST ESTATE | 67 | 320 | 0 | S |
| 4560 LOWER BRAZIL CREEK (PT) | ASHLEY C. ANDERSON, JMC PARTNERSHP WESEN | 502 | 1870 | 1860 | S |
| 4561 HOMESTEAD PASTURE (N) | UPHAUS, WILLIAM JR | 24 | 120 | 0 | S |
| 4562 LITTLE BRAZIL CREEK (N) | LEE DIX | 32 | 160 | 0 | S |
| 4563 COYOTE CREEK (E) | ENGSTROM RANCH INC., JOHN A. WESEN | 957 | 6213 | 2023 | RR/1971 |
| 4564 ALKALI COULEE (PT) | JOHN A. WESEN | 43 | 1188 | 790 | S |
| 4565 THEOFIEL COULEE (N) | LEE DIX | 10 | 40 | 0 | S |
| 4566 (N) | PUTZ TRUST ESTATE | 8 | 40 | 0 | S |
| 4601 NORTH LITTLE BEAVER (E) | BILLINGSLEY, DOROTHY AND JACK | 354 | 3273 | 0 | RR/1988 |
| TOTALS | | 13426 | 83407 | 34173 | |

*Abbreviations: RR = rest rotation, DR = deferred rotation, S = season and livestock numbers specified by permit, no formal grazing system. PT= Potential AMP as proposed in the JVP-RMP, N= Non-AMP as proposed in the JVP-RMP, E = Existing AMP.

Step Three: Reference Conditions

Uplands

The following are excerpts from the original land survey notes, from surveys that were done between 1891 and 1919. These notes give an indication of conditions during the open range and early homestead days.

James and Rodney Page March 1891
South boundary of 30N37E “*This line runs over gently rolling and rolling table land the eastern part (due west line from present day Tampico) is covered with a good growth of grass. The grass is scanty on the western part.*” (east part is all farmland now, west is rangeland).

Note on T30N R37E west line “*several ravines with scattered ash along dry channels*”...

“*whole township is covered with sagebrush*” “*gumbo, second rate, sagebrush. No timber.*” Described township 29N R36E in 1910

Oct 10 1910 T29N R36E “*the land in this township is rolling and very stony. The soil is of 3rd rate gumbo and the whole township is covered with sagebrush. Very little grass on account of the extreme dryness. No rain for a very long time. With normal moisture*

good crops could be raised. No timber in the township.” Edwin H VanAutwerp

T29NR37E Oct 25 1910
“*The land in this township is rolling prairie with gumbo soil of 2nd rate quality. Covered with sagebrush. Soil very hard and dry on account of the extreme drought. No grass to speak of but with abundant moisture the soil would raise all argri products.*”

1919 Twp 28N R36E “*the surface is covered with scattering scrub sagebrush and a fair growth of sandgrass and buffalo grass is found. There are five settlers residing in the township but there is quite a number of vacant shacks indicating that a considerable portion of the land had been squatted on.*” (this township is upper end of Brazil Creek, VR-2 is in the middle of the township)

Step Four: Analysis and Recommendations

Uplands

Standard

The upland standard is: “Uplands are in proper functioning condition.”

This means that soils are stable and provide safe release of water appropriate to the soil type, climate, and landform. The amount and distribution of ground cover (i.e. litter, live and standing dead vegetation, microbiotic crusts, and rock/gravel) for identified ecological sites or soil-plant associations are appropriate for soil stability.

The upland standard Proper Functioning Condition (PFC) is not the same as the objectives in the JVP-RMP, (i.e. 80% good and excellent ecological condition, or less if not feasible or for specific wildlife habitat).

Procedure to determine conformance with standard

Review of early historical records indicates very similar vegetation conditions today.

The uplands were assessed on an allotment basis using a form developed by the Glasgow Field Office assessment team. The 36 allotments were divided into high and low priority and each was visited in the field. The high priority allotments were visited at least once by the team to assess the standards, while an individual usually assessed the low

priority allotments and a call was made on whether the standard was being met.

If there was a question on the call the team would assess the allotment. The team using field write-ups and existing upland studies to determine if the entire watershed was meeting the upland standard evaluated the watershed as a whole.

Existing trend studies on AMP allotments were conducted and evaluated to help determine trend and overall health. The information gathered during the AMP evaluation process, especially the long-term trend data was also considered when assessing whether the upland standard had been met.

The entire watershed on an allotment basis had been mapped for ecological range condition in 1978 and 1979. Individual allotments were re-evaluated for ecological condition during field assessments (See Table 2).

Although weed infestations are not a big threat to the uplands at this time, this does not mean that they could be in the future. With regular field checks we have been successful in limiting the spread of leafy spurge and other noxious weeds.

As the team conducted the allotment assessments, they evaluated the potential and necessity of meeting the JVP-RMP objective of 80% excellent and good ecological status, focusing on the habitat of grassland birds, specifically sage grouse.

Findings

The assessment team has found that currently the uplands in the Antelope-Brazil Watershed meet the Lewistown Standard #1.

The uplands are in proper functioning condition. This does not mean that all the individual allotment objectives that were designated in the RMP and individual plans have been met for the uplands.

Specific ecological sites within an allotment may not meet the upland standard. However, the range of seral stages (ecological conditions) within the watershed is within the range of natural variation for the short grass prairie ecosystem.

The studies that were completed showed a stable ecological state for the sites evaluated. The erosion that was present was what was expected for that ecological site. The long-term trend data gathered during previous evaluation processes indicated an upward trend on the allotment with AMPs.

With 52 % of the classified acres in potential natural community (PNC) or late seral stage, the watershed does not meet the JVP-RMP objective of 80%

excellent or good ecological condition. However, 79% of those acres are dominated by sagebrush and are in PNC (excellent condition) or late (good condition) seral stage. Dense sagebrush, clubmoss and soil types (i.e. excess sodium) limit this watershed in seral advancement. Land treatments, such as chiseling, generally move ecological condition upward on certain range sites.

The potential for the expansion of weeds, specifically leafy spurge and knapweed, is a major concern. There are identified areas of small infestations on public and private lands, which could spread if we reduced our effort of herbicide control. Recreationists, along with wildlife have the potential to spread leafy spurge and other noxious weeds. At the present time we are gaining control of this potential problem through public education, prevention and herbicide control.

Some allotments dominated by crested wheatgrass do not meet the upland standard, lacking species diversity. However, these crested wheatgrass stands provide a unique habitat on a watershed basis and are a valuable part of the ecosystem.

| Table 2. Ecological Status of Uplands | | | | | |
|--|-----------------------------------|------------------------|-----------------------|-------------------------|---------------------------------------|
| ALLOTMENT | Ecological Status in Acres | | | | |
| | PNC (Excellent) | LATE (Good) | MID (Fair) | EARLY (Poor) | UNSUITABLE (Shale Outcrop) |
| 4511 KENT COULEE | 0 | 508 | 0 | 0 | 0 |
| 4515 | 120 | 520 | 0 | 0 | 0 |
| 4518 ASH COULEE | 0 | 304 | 446 | 0 | 0 |
| 4520 MCGREGOR COULEE | 0 | 115 | 4 | 0 | 1 |
| 4523 LOWER BUFFALO COULEE | 0 | 320 | 0 | 0 | 0 |
| 4524 UPPER HAY COULEE | 0 | 40 | 0 | 0 | 0 |
| 4532 | 0 | 20 | 140 | 0 | 0 |
| 4533 UPPER ANTELOPE CREEK | 0 | 1139 | 627 | 0 | 34 |
| 4534 NORTHFORK ANTELOPE | 0 | 959 | 1411 | 0 | 50 |
| 4535 SOUTHFORK ANTELOPE | 0 | 2447 | 6611 | 0 | 230 |
| 4536 TRUAX COULEE | 11 | 882 | 1189 | 0 | 12 |
| 4537 LOWER NORTHFORK ANTELOPE | 0 | 1169 | 1032 | 0 | 67 |
| 4538 LOWER HARDCRABBLE | 0 | 293 | 871 | 0 | 9 |
| 4539 HARDCRABBLE CREEK | 0 | 875 | 1377 | 0 | 33 |
| 4540 HAY COULEE | 0 | 1582 | 1664 | 0 | 70 |
| 4541 LOWER HAY COULEE | 0 | 137 | 423 | 0 | 10 |
| 4542 ANTELOPE CREEK | 23 | 1878 | 2618 | 0 | 114 |
| 4543 LOWER ANTELOPE CREEK | 0 | 210 | 270 | 0 | 0 |
| 4553 BRAZIL CREEK | 0 | 9004 | 16938 | 0 | 651 |
| 4554 LOWER SOUTHFORK ANTELOPE | 0 | 2098 | 1045 | 0 | 199 |
| 4555 BULLOCK COULEE | 0 | 711 | 1263 | 0 | 42 |
| 4556 HAY FEVER | 0 | 280 | 340 | 0 | 20 |
| 4557 SECOND BRAZIL CREEK | 0 | 246 | 2804 | 0 | 23 |
| 4558 WIRENET CORRAL | 0 | 0 | 568 | 0 | 0 |
| 4559 | 43 | 266 | 9 | 0 | 2 |
| 4560 LOWER BRAZIL CREEK | 0 | 1063 | 807 | 0 | 0 |
| 4561 HOMESTEAD | 0 | 106 | 14 | 0 | 0 |
| 4562 LITTLE BRAZIL CREEK | 0 | 152 | 0 | 0 | 8 |
| 4563 COYOTE CREEK | 0 | 3809 | 2266 | 38 | 100 |
| 4564 ALKALI COULEE | 0 | 251 | 937 | 0 | 4 |
| 4565 THEOFIEL COULEE | 0 | 40 | 0 | 0 | 0 |
| 4566 | 0 | 40 | 0 | 0 | 0 |
| 4601 NORTH LITTLE BEAVER | 0 | 2683 | 592 | 0 | 0 |
| TOTAL | 228 | 34991 | 46654 | 38 | 1696 |

Analysis

The upland standard is being met on all the allotments when evaluated on a watershed basis. (See Executive Summary)

Livestock grazing systems and current levels of use are maintaining healthy rangelands. Weed infestations occur in minor amounts and are under control through our cooperative weed program. If weed expansion should occur, biodiversity would go down as noxious weeds can totally dominate a site.

Fire control, overgrazing and lack of buffalo herd disturbance probably resulted in an increase in clubmoss density following settlement from the 1890's to the 1930's. Ecological sites dominated by clubmoss are in a stable ecological state unless there is a disturbance. The reintroduction of fire or applying mechanical treatments would reduce clubmoss and advance the ecological seral stage.

Meeting the RMP objective of 80% late seral or PNC in the watershed would entail considerable land treatment in most allotments, which may not be economically feasible and could conflict with wildlife habitat needs.

The crested wheatgrass fields in this watershed provide early spring livestock grazing. This benefits the vegetation and nesting birds, such as sage grouse in the native grass area of these allotments.

Recommendations

Continue existing allotment management plans (AMPs) as most trend data shows an upward trend even with the satisfactory conditions we now have on the allotments. Allotments identified as potential AMPs, (See Table 1) will be considered for future needs.

Encourage mechanical treatment and fire in combination with the grazing systems to increase the total production, cover and height of grasses on the clubmoss infested sites on native range where this does not conflict with habitat needs for sensitive bird species.

Continue the cooperative weed program with the Valley Weed Control District to ensure any new weed infestations will be aggressively sprayed with herbicides to eradicate the weed(s).



This PFC {Proper Functioning Condition} range site is dominated by native grasses such as; western wheatgrass, blue grama, needle-and-thread, and prairie junegrass. This site is located in the Lower Southfork Allotment (#4554).



This PFC {Proper Functioning Condition} range site is dominated by big sagebrush and western wheatgrass. This site is located in Hay Fever Allotment (#4556).

RIPARIAN AND WETLAND AREAS

Step One: Issues and Key Questions

Riparian/Wetland Health

RMP Decisions:

- a) "...Improve or maintain riparian and wetland areas to proper functioning condition"
- b) "...Achieve or maintain the desired plant community...provide sufficient plant residue to protect streambanks."

Lewistown Standard # 2

"Riparian and wetland areas are in proper functioning condition"

Key question:

- 1) What areas should or should not be managed as riparian areas?

Step Two: Characterization/Current Conditions

Riparian and Wetland Areas

Hydrology/ stream channel

Stream flow: Streams within the study area are either intermittent or ephemeral. There are large seasonal variations in flows with the largest flows generally occurring during spring or early summer because of snowmelt and rainstorms.

Stream Riparian Vegetation and Functional Status

Montana riparian vegetation is classified into habitat types and community types. Habitat types (HTs) are stable, climax plant communities, representing the potential natural vegetation for the site. The objectives for such sites are to maintain the current habitat type. Community types (CTs) represent lower seral types that are stable for time frames relevant to land management decisions (Hanson et al 1995). In theory these communities could advance in succession to a habitat type. Although most of the riparian areas inventoried were shrub/grass community and habitat types, trees, such as green ash, cottonwood, box elder and willow, were found along many of the inventoried streams, see Table 3.

Wetland Areas

All wetlands in the watershed area are constructed reservoirs

| Table3. Riparian Objectives, Riparian Standard Status | | | | | |
|--|---------------|---|----------|--------------|-----------|
| Allot # | Stream | Vegetation type | Function | Stream Miles | Polygon # |
| 4534 | N.F. Antelope | Woods Rose (CT) | PFC | 0.1 | R-1 |
| 4534 | Hardscrabble | Sharp Bulrush (HT) | PFC | 0.6 | R-2 |
| 4535 | N.F. Antelope | Inland Saltgrass (HT) | PFC | 1.7 | R-283 |
| 4535 | S.F. Antelope | Sedge (HT) Western wheat (HT) | PFC | 1.0 | R-535 |
| 4535 | S.F. Antelope | Western wheat (HT) | PFC | 1.0 | R-282 |
| 4537 | N.F. Antelope | Western wheat (HT) | PFC | 2.0 | R-1 |
| 4538 | Antelope | Western wheat (HT) | PFC | 2.6 | R-506 |
| 4539 | Bob Coulee | Bulrush (HT) | PFC | 1.9 | R-284 |
| 4539 | Hardscrabble | Sedge (HT) | PFC | 0.8 | R-285 |
| 4542 | Bob Coulee | Woods Rose/ Snowberry (HT) | PFC | 0.6 | R-521 |
| 4542 | Antelope | Snowberry/ Western wheat (HT) | PFC | 0.3 | R-87 |
| 4553 | Brazil Creek | Green Ash/Snowberry (HT) Western wheat (HT) | PFC | 8.0 | OP-2 |
| 4553 | Brazil Creek | Yellow Willow (CT) Western wheat (HT) | PFC | 3.9 | OP-1 |
| 4554 | N.F. Antelope | Western wheat (HT) | FAR (u) | 0.9 | OP-1 |
| 4554 | N.F. Antelope | Inland Saltgrass (HT) Western wheat (HT) | PFC | 2.7 | R-554 |
| 4558 | Brazil | Green Ash/Woods Rose HT Western wheat (HT) | PFC | 0.9 | R-558 |
| 4559 | Brazil | Sandbar Willow (CT) Western wheat (HT) | PFC | 0.8 | R-322 |
| 4560 | Brazil | Green Ash/Woods Rose HT Western wheat (HT) | PFC | 1.2 | R-83 |
| 4561 | UT Brazil | Western Wheat/Spikesedge (HT) | PFC | 0.4 | R-1 |
| 4563 | Little Brazil | Western wheat (HT) | FAR | 1.1 | R-220 |
| 4564 | Brazil Creek | Green Ash/Woods Rose HT Western wheat (HT) | PFC | 0.8 | R-84 |
| 4601 | S.F. Brazil | Western wheat (HT) | PFC | 1.4 | R-324 |

* Abbreviations: CT= Community Type, HT= Habitat Type, PFC = Proper Functioning Condition, FAR = Functioning-At-Risk, FAR (u) = Functioning-At-Risk with an upward trend.

Stream Riparian Function/Health and Vegetation Communities

Potential and condition of the above listed streams were determined during the 2001 and 2002 field seasons.

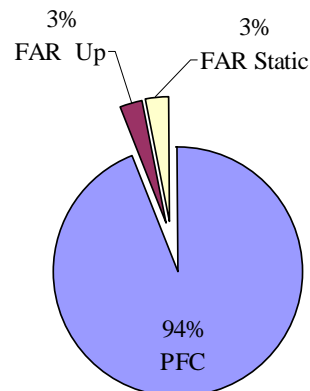
Examples of habitat types in this watershed are Green Ash/Snowberry (*Fraxinus pennsylvanica*/*Symphoricarpos albus*), Inland saltgrass (*Distichlis spicata*) and Western wheatgrass (*Agropyron smithii*). These riparian areas are at their potential so the objective for these sites is to maintain the current habitat type.

Community types in the watershed include Woods rose (*Rosa woodsii*), and Sandbar willow (*Salix exigua*). In theory, these communities are a lower seral community that could advance in succession to a habitat type.

One of the functions of this watershed assessment is to establish realistic objectives. Objectives for community types need to reflect site potential as nearly as can be determined. Site potential should be based, not just on the "book" characteristics but, on careful evaluation and observation. Below are the results of the function and health assessments, see Table 4.

| Table 4. Antelope-Brazil Watershed Riparian Condition 2002 (See Map 4). | | | | |
|---|--------|------------|----|-------------|
| PFC | FAR Up | FAR Static | NF | Total miles |
| 32.7 | .9 | 1.1 | 0 | 34.7 |

Figure 1. Riparian Status in Percentage



Wetland Areas

Nearly all wetlands in the watershed are constructed reservoirs.

Step Three: Reference Conditions

Below are notes from early date land surveys taken where survey lines crossed streams. Their notes were very sketchy in this watershed, one did not yield much information. What little information there was seemed to indicate similar vegetation as today.

1891 9th Meridian N-S line on east side of 28N 38E mentions, *"There are some fertile and quite extensive bottoms along streams and channels. ... luxuriant growth of nutritious grasses"* Brazil Creek 30 links wide dense undergrowth Sections 16, 17,20,21

TWP line between 37 and R38 E Brazil Creek channel... 20 lks wide (no mention of underbrush or willow) Apr 1907

T29NR37E Oct 25 1910
"No timber in the township. A few scattering trees along the creek." (Antelope Creek)

1919 Twp 28N R36E
"There is no timber in the township except about a half dozen scrub willows along Brazil Creek. The only water is found in holes along Brazil Creek."

Step Four: Analysis and Recommendations

Riparian and Wetland Areas

Standard

"Riparian and Wetland Areas are in proper functioning condition."

Procedure to determine conformance with standard

Previously established and previously monitored riparian polygons were reevaluated by a BLM interdisciplinary team. At these sites photos were taken at the same locations as previous years and Montana Riparian/Wetland Association (MRWA) inventory forms were used to assess site conditions. New riparian study sites were set up in all other allotments, within the watershed, where there were no established sites. Historical records did not indicate significantly different plant communities.

Findings

Thirty-five stream miles were inventoried for riparian function/health status and trend. Of those miles monitored, 1.1 (3.2%) were found to be functional-at-risk with a static trend, 0.9 (2.6%) were found to be functional-at-risk with an upward trend, and 32.7 (94.2%) were in proper functioning condition (See Figure. 1, page 15).

Recommendations

No changes in grazing management or other uses are recommended at this time. Livestock grazing is not the major factor; therefore grazing changes would not improve the condition of these riparian areas.

WATER QUALITY

Step One: Issues and Key Questions

RMP Decisions

"Surface and groundwater quality will be maintained to meet or exceed state and federal water quality standards"

Lewistown Standard #3

"Water quality meets Montana State standards."

Key Question:

Are the state of Montana water quality standards being met in this watershed?

Step Two: Characterization/Current Conditions

Surface Water

The water quality standard listed in the Standards and Guidelines states that surface and groundwater on public lands must fully support the designated beneficial uses described in the Montana Water Quality Standards. The Montana Department of Environmental Quality (DEQ) has classified all streams within this watershed as B-3. Designated beneficial uses for B-3 streams are bathing, swimming and recreation, growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers. The quality of these waters is naturally marginal for drinking, culinary

and food processing purposes, agriculture and industrial water supply.

As a result of the Clean Water Act (CWA) passed in 1972, states were directed to develop Total Maximum Daily Loads (TMDLs) that set limits on point and nonpoint source pollution loading to water quality-limited water bodies. These water bodies are listed in the CWA 303 (d) list of impaired streams. The CWA section 303(d) and the U.S. Environmental Protection Agency (EPA) Water Quality Planning and Management Regulations require each state to:

- 1) Identify water bodies that are water quality-limited
- 2) Prioritize and target water bodies for TMDLs
- 3) Develop TMDL plans to attain and maintain water quality standards for all water quality-limited waters.

All streams within the study area are considered to be meeting water quality standards as long as the channel is stable and the riparian area is in proper functioning condition.

Ground Water

Because of naturally high TDS levels groundwater is marginal to unsuitable for domestic use but suitable for livestock (*Milk River Investigation Report, 1960*).

Step Three: Reference Conditions

No historical observations are available.

Step Four: Analysis and Recommendations

Water quality meets Montana state standards.”

Surface and groundwater on public lands fully support designated beneficial uses described in the Montana Water Quality standards. Water quality is indicated by dissolved oxygen (DO) concentration, pH, turbidity, temperature, fecal coliform, sediment, toxins, and others such as chlorides, cyanide, nitrates, phenols, sodium,

sulfates, etc. For a complete definition of the standard contact the Glasgow Field Station office.

Procedure to determine conformance with standard

To determine conformance with standard the BLM refers to Montana’s 303(d) list of impaired streams.

Recommendations

Water quality in this watershed is directly affected by the condition of the riparian areas. Because of this the recommendations listed in Table 3 for meeting riparian standards would be the same as those for meeting water quality standards.



BOB COULEE, R-284 -- PFC



ANTELOPE CREEK R-506, -- PFC



BRAZIL CREEK R-558, PFC



SOUTHFORK ANTELOPE CREEK, OP-1 –FAR



SOUTHFORK BRAZIL CREEK, R-83 –PFC

WILDLIFE HABITAT / BIODIVERSITY

Step One: Issues and Key Questions

RMP Decisions:

“The BLM will maintain and enhance suitable habitat for all wildlife species. The emphasis for habitat maintenance and development will be on present and potential habitat for sensitive, threatened and/or endangered species, nesting waterfowl, crucial wildlife winter ranges, non-game habitat, and fisheries. The BLM will maintain or manage prairie dog towns on BLM lands based on the values or problems encountered.”

Lewistown Standard #5:

The regional standard for rangeland health that applies is the Central Montana Standard #5:

"Habitats are provided to maintain healthy, productive and diverse populations of native plant and animal species, including special status species (federally threatened, endangered, candidate or Montana species of special concern as defined in BLM Manual 6840. Special Status Species Management)."

Key Questions:

1) Sage grouse: Can sage grouse habitat in the big sagebrush and silver sagebrush be maintained or increased?

2) Fisheries: Is management of the existing fishing reservoir adequate?

3) Mountain plover: What is good mountain plover habitat? How can we manage for it or increase the amount of habitat?

4) Waterfowl: What management techniques and land treatments should be employed to enhance or maintain current habitat? Is nesting cover adequate?

5) Grassland birds: How do we find a balance to meet habitat requirements for species (especially special status species) that need a variety of habitats from very short vegetation to dense, tall cover? What is the effect of crested wheatgrass? Is the goal of 80% good to excellent ecological status appropriate for the wildlife species present?

6) Prairie dogs: The black-tailed prairie dog has been added to the candidate list of endangered and threatened wildlife and plants. Does this watershed contain potential prairie dog habitat?

Step Two: **Characterization/Current** **Conditions**

Wildlife Habitat / Biodiversity

This watershed encloses a variety of wildlife habitats; correspondingly there is a variety of wildlife species present. The principal types of wildlife habitats are; sagebrush-grass shrub habitat, grassland habitat, woody draw deciduous tree and shrub habitat, and cottonwood-green ash-willow riparian forest habitat. Less common habitats are the reservoir wetland habitat, and the sparsely vegetated hardpan. The predominant habitat is the sagebrush-grassland habitat. Big sagebrush is common, also found in this watershed is silver sagebrush, which grows along the drainage ways.

Most of the wildlife species that are found in the rest of the Glasgow Field Station can also be found in the Antelope - Brazil Creek watershed. But sagebrush dependent species predominate here. Game animals not expected to be found here would be elk and bighorn sheep, with limited numbers of gray partridge, pheasant, and white-tailed deer.

The combinations of woody draws, wetlands, and grasslands provide habitat for mule deer, along with, for example, coyotes, beaver, mourning doves, and sharp-tailed grouse. There are 9 known sharp-tailed grouse leks. The sagebrush-grass shrub habitat provides habitat for pronghorn antelope and sage grouse.

There are 28 known sage grouse leks. Counts of these breeding grounds in the last twenty years averaged 11 males/lek. During the last few years (1999 – 2003) counts of these breeding grounds average 14 males/lek. Not every lek was counted every year during the past twenty years.

There is no crucial winter habitat for mule deer or antelope. This watershed contains important spring, summer, and fall habitat for deer and antelope. Small game animals are mountain cottontail, white-tailed jackrabbit, mink, striped skunk, badger, and shorttail weasel. There is one black-tailed prairie dog colony on state land in this watershed.

Some of the amphibians and reptiles are; chorus frogs, leopard frogs, tiger salamanders, garter snakes, racers, bull snakes, and western rattlesnakes. Raptors found in the area are golden eagles, prairie falcons, northern harriers, Swainson's hawks, ferruginous hawks, red-tailed hawks, and rough-legged hawks. The natural waterfowl habitat for geese and ducks is found in the pools in the streams. Created waterfowl habitat is the most common and is located on the reservoirs and the surrounding uplands. The woody draws, wetlands, and grasslands provide habitat for neotropical migratory birds and other landbirds.

Special Status Species –

There are no threatened or endangered animal species in the Brazil-Antelope Creek watershed. Of the present proposed or candidate species; mountain plovers have been observed in the watershed and there are no known black-tailed prairie dog colonies on BLM-administered lands. The following former candidate species use the area; ferruginous hawk, western burrowing owl, loggerhead shrike, Baird's sparrow, black tern, and long-billed curlew.

Special Status Species that have been reported in this watershed are; Mountain Plover, Ferruginous hawk, Swainson's hawk, Burrowing owl, Hairy woodpecker, Baird's sparrow, Loggerhead shrike, Long-billed curlew, Black tern, Common loon, and Canvasback duck.

Comment: 1999-172 males on 20 leks (8.6); 2000-204 on 12 (17); 2001-232 on 15 (15.5); 2002-156 on 13 (12); 2003-254 on 16 (16)

Fisheries

There are 2 reservoirs that are listed in the JVP to be managed for fisheries. They are Lunch Reservoir and Shoot Reservoir. Neither of these reservoirs are managed as a fishery now. Paulo Reservoir was constructed after the JVP was completed. It is being managed for its' fishery resource.

There are 2 exclosures in the watershed (1 for a seep area and 1 around a fishing reservoir). There were 15 islands constructed in 10 reservoirs of this watershed. The islands were designed for waterfowl production and have benefited the Canada goose population.

Any management practice may enhance some species and deter others. Grazing is not incompatible with a diverse avifauna, as shown in Table 5 and Figure 2. Moderate grazing of pastures may enhance local habitat diversity. Each grassland species has a particular kind of preferred vegetation for nesting, facilitating management for particular groups of species. Information contained in the following table came mainly from: Johnson, D. H., and L. D. Igl (Series Coordinators). 2001. Effects of management practices on grassland birds. *Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page:*<http://www.npwrc.usgs.gov/resource/literatr/grasbird/grasbird.htm> (Version 11APR2001).

Table 5. Habitat Requirements of Grassland Birds Found in the Watershed

| Species | ESA Status | Preferred Habitat | Approximate Grazing method / intensity |
|---------------------|---------------------|---|---|
| Mallard | None | Wetlands and a high density of brushy vegetation or tall, dense grass, native or introduced. | Mallard, which nest early, do not show a reduction in nest density on spring grazed fields. The previous year's grass regrowth is important to provide nesting cover. |
| Lesser scaup | None | Wetlands with shallow marsh emergent vegetation. Mallard avoided this type. | Grazing has little effect, unless the emergent vegetation is grazed. |
| Sage grouse | Potential candidate | Sage grouse can be found in or near sagebrush habitats year round. They also require moist wetland and wet meadows to aid in brood rearing. | The previous year's regrowth of grass is important to provide nesting cover in combination with taller sagebrush plants growing in dense stands. Light grazing on sagebrush in combination with moderate to heavy grazing of grass and forbs with regrowth during early summer is preferable. |
| Sharp-tailed grouse | None | Grasslands interspersed with some brushy cover. | Any grazing that allows grass regrowth. Hens select from residual cover remaining from the previous year's growth and cover removal factors (grazing, mowing, burning, snow flattening). The largest breeding grounds have been located in areas surrounded by extensive, heavy stands of residual herbage. |
| Long billed curlew | Former candidate | Expansive, open, level to gently sloping or rolling grasslands with short vegetation such as shortgrass or recently grazed mixed-grass prairie. | Grazing can be beneficial if it provides suitably short vegetation, particularly during the pre-laying period. In Idaho, neither cattle nor sheep could graze dense stands of perennial wheatgrasses, such as crested wheatgrass, to a height that was usable by curlews. Long-billed curlews preferred recently grazed areas and did not use areas that had not been grazed for over 1 yr. |

Table 5. Habitat Requirements of Grassland Birds Found in the Watershed

| Species | ESA Status | Preferred Habitat | Approximate Grazing method / intensity |
|--------------------|---------------------|---|---|
| Loggerhead Shrike | None | Open habitat characterized by grasses and forbs of low stature interspersed with bare ground and shrubs or low trees. Scattered shrubs or trees, particularly thick or thorny species, serve as nesting substrates and hunting perches. Thorny shrubs or trees also serve as impaling stations. | Grazing can provide preferred habitat by shortening vegetation in taller grassland areas. Trees and shrubs used for nesting and perches should be protected from cattle grazing and rubbing. In shortgrass habitat, Loggerhead Shrikes preferred to forage in ungrazed areas, which provided taller (>20 cm) grass, as they serve as food reserves for small mammals, which are potential Loggerhead Shrike prey. |
| Mountain plover | Proposed Threatened | Large, flat grassland expanses with sparse, short vegetation and bare ground are preferred. Areas disturbed by prairie dogs, heavy grazing, or fire can provide suitable habitat. | Mountain plovers prefer heavily grazed grasslands. Prairie dogs within shrub-grassland pastures can control sagebrush growth and provide suitable nesting habitat. Grazing activities that maintain short vegetation and low litter attract plovers. Vary grazing pressure by interspersing areas of heavy, light, and non-grazing. |
| Burrowing Owl | Potential candidate | Well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground such as moderately or heavily grazed pasture, with populations of prey species and of burrowing mammals to ensure availability of burrows as nest sites. In particular, the conservation of black-tailed prairie dog and Richardson's ground squirrel colonies appears to be vital to the preservation of Burrowing Owls. | Because owls forage over tall grass and nest and roost in short grass, a mosaic of habitats may be important in conserving habitat. Allow heavy grazing on saline, gravelly, stony, or sandy areas. Allow moderate to intense grazing on good soils that otherwise would support tall vegetation. Protect colonies and increase populations of burrowing mammals. Maintain abandoned prairie dog colonies at an early successional stage, with short (<8 cm) vegetation. Implement rotational grazing in heavily grazed areas to increase prey populations. |
| Swainson's Hawk | None | Open grasslands that contain patches of trees for nesting and perching and that are near cultivated areas. Swainson's Hawks prefer open grassland areas with scattered trees or with small clumps of trees or shrubs. They use shortgrass, mixed-grass, tallgrass, and sandhill prairies; aspen parklands; riparian areas; isolated trees; shelterbelts; woodlots; black-tailed prairie dog colonies; pastures; hayland; and cropland | In the absence of large tracts of native prairie, Swainson's Hawks will breed in small patches of natural or semi-natural cover containing trees near cultivated areas. Plant trees and, if necessary, build livestock exclosures around existing stands of trees to provide and protect nesting sites. |
| Sprague's pipit | None | Native prairie grassland habitat, with intermediate vegetation height, low visual obstruction, moderate litter cover, decreasing bare ground, and little or no woody vegetation. | Abundance of Sprague's Pipits was positively associated with percent clubmoss cover and plant communities dominated by native grass (Stipa, Bouteloua, Koeleria, and Schizachyrium). Avoid heavy grazing; throughout the breeding range, light to moderate grazing may be beneficial. Grazing tame pastures in spring allows native pastures to be deferred, which improves habitat in the native pastures for Sprague's Pipits. |
| McCowan's longspur | None | Short, sparsely vegetated native grasslands with little litter and low forb cover. McCowan's Longspurs often breed on barren hillsides with southern exposures. | Mixed-grass areas can be made suitable for breeding McCowan's Longspurs by implementing moderate to heavy, or season-long grazing, and preferred heavily grazed pastures over lightly or moderately grazed pastures. McCowan's Longspurs preferred continuously grazed (season-long) native pastures, and were fairly common in native pastures grazed in early summer and they avoided deferred-grazed (grazed after 15 July) native pastures. |

Table 5. Habitat Requirements of Grassland Birds Found in the Watershed

| Species | ESA Status | Preferred Habitat | Approximate Grazing method / intensity |
|---------------------|------------------|--|--|
| Baird's sparrow | Former candidate | Idle native or idle tame grasslands, and lightly to moderately grazed pastures with moderately deep litter, moderately high, but patchy, forb coverage; patchy grass and litter cover; and little woody vegetation. Baird's Sparrows respond more strongly to vegetative structure than to species composition. | Heavy or continuous grazing that reduces residual vegetation and litter is detrimental in both moist and dry parts of the species' breeding range. Grazing systems that provide range in good (moderate vegetative and litter cover) condition provide suitable habitat. Prevent overgrazing in pastures utilized by Baird's Sparrows. Graze using a deferred rotational system to ensure that only part of the range is grazed during the growing season. Grazing tame pastures in spring allows native pastures to be deferred, which improves habitat in the native pastures for Baird's Sparrows. |
| Grasshopper sparrow | None | Large areas of contiguous grassland of intermediate height with moderately deep litter cover, low shrub density, and are often associated with clumped vegetation interspersed with patches of bare ground. | Use various grazing systems (e.g., early-season, deferred, and continuous grazing of native grasslands, and spring-grazing of tame grasslands) to maintain a mosaic of grassland types. By allowing tame pastures to be grazed in spring, suitable habitat is maintained in the tame pastures for Grasshopper Sparrows, and grazing in native pastures can be deferred |
| Lark bunting | None | Grasslands of low to moderate height with high vegetative cover and some bare ground, often with a superstory component such as shrubs. Sagebrush and greasewood are important shrubs. | In shortgrass prairie, heavy grazing is often detrimental to Lark buntings because it increases bare ground cover, reduces vegetation height, and removes protective cover. Lightly to moderately grazed areas were preferred over heavily grazed areas in shortgrass and shrubsteppe habitats. Pasture that was heavily grazed in the winter was preferred over pasture that was heavily grazed in the summer in northcentral Colorado. |
| Western meadowlark | None | A variety of grassland types and heights, sparse woody cover, and high forb and grass cover. In the Great Plains, Western Meadowlarks use a wide range of vegetation heights and densities, although they avoid extremely sparse or tall cover. They prefer high forb and grass cover, low to moderate litter cover, and little or no woody cover. | Western Meadowlarks usually respond positively to light to moderate grazing and negatively to heavy grazing, although they also may exhibit no response to grazing. In North Dakota, Western Meadowlarks preferred grazed fields over DNC, but showed no response to grazing intensities or to short-duration (involved a system of pastures rotated through a grazing schedule of about 1 wk grazed and 1 mo ungrazed, repeated throughout the season), twice-over rotation (involved grazing a number of pastures twice per season, with about a 2-mo rest in between grazing), or season-long (involved leaving cattle on the same pasture all season) grazing systems. |
| Horned Lark | None | Short, sparse herbaceous vegetation with little or no woody vegetation or litter. Occupied areas are characterized by moderate coverage (10-37%) of bare ground. | Burning, mowing, or grazing can be used interchangeably to create short, sparse vegetation. Horned Larks preferred heavily grazed over lightly or moderately grazed pastures and preferred heavily winter-grazed sites over heavily summer-grazed sites for breeding. |
| Vesper Sparrow | None | Dry, open areas with short, sparse and patchy vegetation. However, they may be found in a variety of habitats, including shortgrass, mixed-grass, and tallgrass prairie; semidesert grasslands; sagebrush; pastures; hayland; cropland; shrubby grasslands; and woodland edge. The availability of sagebrush for nest cover and song perches is important. | Densities of Vesper Sparrows were highest on moderately grazed and lightly grazed shrubsteppe/grassland habitat. Areas with highest densities of Vesper Sparrows also had above-average abundance of wheatgrasses, Junegrass, fringed sagewort, and big sagebrush. |
| Lark Sparrow | None | Open grasslands with sparse to moderate herbaceous and sparse litter cover, and a shrub component, and allowing moderate grazing or occasional burning. | Lark Sparrows nested in moderately to heavily grazed pastures, but also nested in idle fields. |

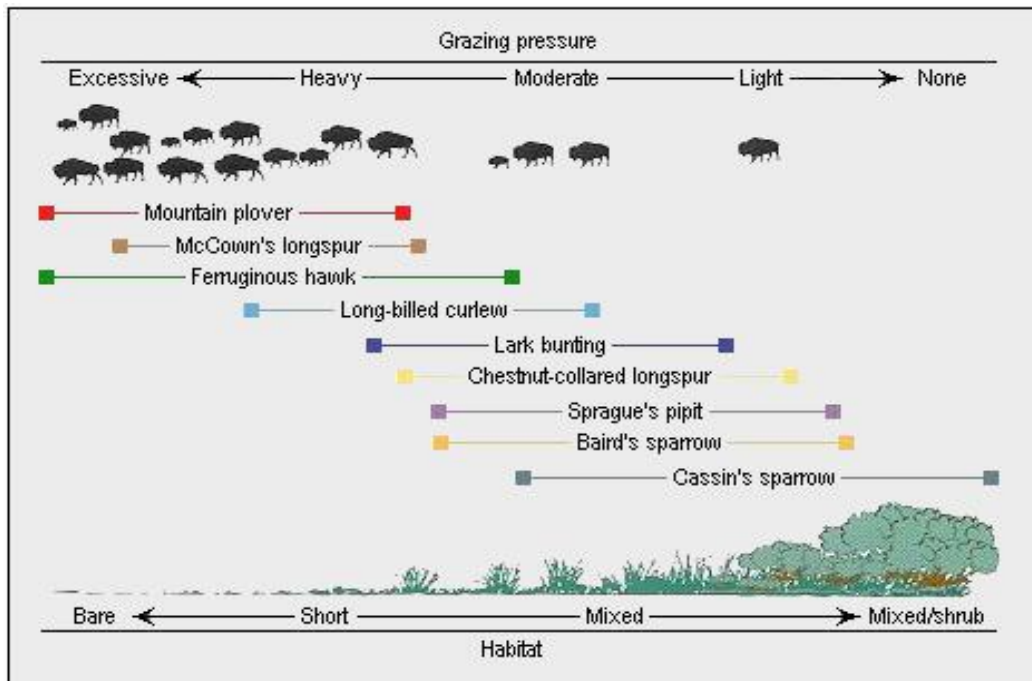


Figure 2. Importance of co-evolution between grazing and native prairie bird distributions and abundances.

The mountain plover responds to highly disturbed sites, the chestnut-collared longspur to moderately grazed areas, and the Baird's sparrow to sites with taller grasses. Major anti-grazing structures evolved in plants: thorns and spikes; thick or hard tissues difficult to bite, chew, or digest; and secondary compounds difficult to digest. These structures have arisen through the long co-evolutionary association between

plants and animals with grazing on grasslands. Figure 2 came from: Samson, F. B., F. L. Knopf, and W. R. Ostlie. 1998. *Grasslands*. Pages 437-472 in M. J. Mac, P. A. Opler, C. E. Puckett Haecker, and P. D. Doran, eds. *Status and Trends of the Nation's Biological Resources*, Vol. 2. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgs.gov/resource/2000/grlands/grlands.htm> (Version 21JAN2000).

Step Three: Reference Conditions

Wildlife Habitat / Biodiversity

It is very difficult to quantify what this prairie ecosystem contained over 200 years ago. Whatever plants and animals that were there at that time were affected by disturbance from fire, buffalo, and precipitation levels, all based upon soils. The intensity of human disturbance in this area varies; some of the land was tilled and is back in grass and forbs, while other areas have never been cultivated, only livestock have grazed it. For the smaller animals, insects, and microorganisms life is the same as it always has been. No special status plant species are known to be located in this watershed. There are non-native plants scattered throughout the area; examples are sweet clover and crested wheatgrass.

The wildlife species missing from the area that would have been present a couple of hundred years ago would be bison, grizzly bear, gray wolf, and swift fox.

The extent or presence of large prairie dog towns is unknown, so it is hard to say if there were black-footed ferrets in the watershed. Other wildlife species have been introduced or are more extensive; examples are - ring-necked pheasants, gray partridge, California gulls, ring-billed gulls, raccoons, red fox, and waterfowl. There would have been much less waterfowl produced in the area in the past as compared to the present day. The current waterfowl production is due mainly to the reservoirs constructed,

which have provided permanent water. In 1885, the final few buffalo in Valley County, Montana Territory were killed along Cherry Creek. Green ash trees are more common in this watershed area than in other parts of the Glasgow Field Station area. Beaver have repopulated the Brazil Creek drainage.

The sage grouse was the leading upland game bird in 9 western states during settlement times. This area saw in 1917 its land rush peak. Prior to 1870 there were no regulations relative to hunting sage grouse or sharp-tailed grouse in Montana. Starting in 1870 the season on those species was closed from March 1 to August 15. In the early 1900s regulations became more restrictive until in 1927 the season was closed completely. For the next 10 years, seasons for sage grouse were short, usually only 3 days in length. During 1936 and 1937, the sage grouse season was again closed. Seasons for sage grouse were closed from 1945 to 1951. The sharp-tailed grouse seasons in those years ran for 2 to 7 days.

Statewide the sage grouse harvest in 1958 was just under 20,000 and peaked in 1964 at 100,000 with another peak at 65,000 in 1979. Harvest of sage grouse dropped to 15,000 during 1985-86 and has been staying around that level or slightly lower since then.

Step Four: Analysis and Recommendations

Wildlife Habitat / Biodiversity

Standard

Standards are statements of physical and biological conditions or degree of function required for healthy sustainable rangelands.

The regional standard for rangeland health that applies to this watershed is Standard #5: Habitats are provided to maintain healthy, productive and diverse populations of native plant and animal species, including special status species (federally threatened, endangered, candidate or Montana species of special concern as defined in *BLM Manual 6840, Special Status Species Management*).

Procedure to determine conformance with standard

This standard is similar to an overall assessment that includes the previous standards and adds wildlife habitat to it. The present state of the watershed will be compared to the reference conditions, the functionality of the uplands and riparian areas, new information since the RMP was completed, and the key questions.

The allotments in this watershed are part of the plains-prairie grasslands. A dense forest of evergreen trees or deciduous trees will not grow here. We need to anticipate what types of wildlife habitat can be expected, in order to judge if optimal biodiversity is being achieved. We are to consider the range of natural variation in the surface conditions of prairie ecosystems. During pre-settlement times the conditions the landscapes as a whole would have been variable and patchy -- with bare areas, areas of short grass, shrubs, areas of ungrazed

long grass; with riparian areas running through all of these.

The key to determining the state of these systems is the determination that there is neither too much, nor too little, of these surface conditions to fall within the range of natural variation within that specific ecosystem.

The wildlife habitat niches expected are: short grasslands, mid grasses, bare ground, streams, wetlands, riparian areas, shrublands, and various mixes of these components.

The S&G EIS also explains ways to recognize compliance with the wildlife habitat/biodiversity standard. The document says the following are indicators of meeting the standard:

- plants and animals are diverse, vigorous, and reproducing satisfactorily; noxious weeds are absent or insignificant in the overall plant community
- spatial distributions of species is suitable to ensure reproductive capability and recovery
- a variety of age classes are present
- connectivity of habitat or presence of corridors prevents habitat fragmentation
- species richness (including plants, animals, insects and microbes) are represented
- plant communities in a variety of successional stages are represented across the landscape.

The JVP - RMP has additional decisions on what are the priorities for

management. They are: The BLM will maintain and enhance suitable habitat for all wildlife species. The emphasis for habitat maintenance and development will be on present and potential habitat for sensitive, threatened and/or endangered species, nesting waterfowl, crucial wildlife winter ranges, non-game habitat, and fisheries. The BLM will maintain or manage prairie dog towns on BLM lands in the Valley RA, based on the values or problems encountered.

Findings

The wildlife habitat / biodiversity standard is being met overall in this watershed (see Table 6, page 32).

This conclusion is based upon representative vegetation plots, bird counts, visual observation, riparian studies, and upland studies.

For this area no threatened or endangered species have been added or removed since the JVP was completed. The mountain plover is a proposed threatened species. In the last few years the range-wide decrease in populations of the Greater sage grouse has brought more attention to sagebrush species. The numbers of male sage grouse in this watershed have had a varied trend as represented in the following graph, figure 3.

Grouse lek number 1 has gradually increased, while grouse lek number 6 had a drop followed by more stable numbers each spring.

Nationwide, cultivation of native prairie has caused the greatest change in wildlife habitat. In this watershed the limited change from the original native prairie is evidence that the grassland has the species richness and that plants and animals are diverse and vigorous. Some of the grassland has been cultivated, but what was cultivated is now covered with primarily native vegetation.

The watershed has large blocks of land in sagebrush/grassland cover adjacent to each other to maintain connections with other grassland ecosystems. The habitat is not fragmented.

The vegetation has a variety of age classes. Some riparian areas could have more younger age classes of woody species to be optimal. The plant communities are in a variety of successional stages. There is more in an early successional stage than the goal set in the JVP. The flatter grasslands with clubmoss provided habitat for species that prefer short grass, such as the long-billed curlew. Other clubmoss areas could provide more nesting cover for waterfowl and grouse if chisel plowed. No cultivation would occur on BLM-administered lands.

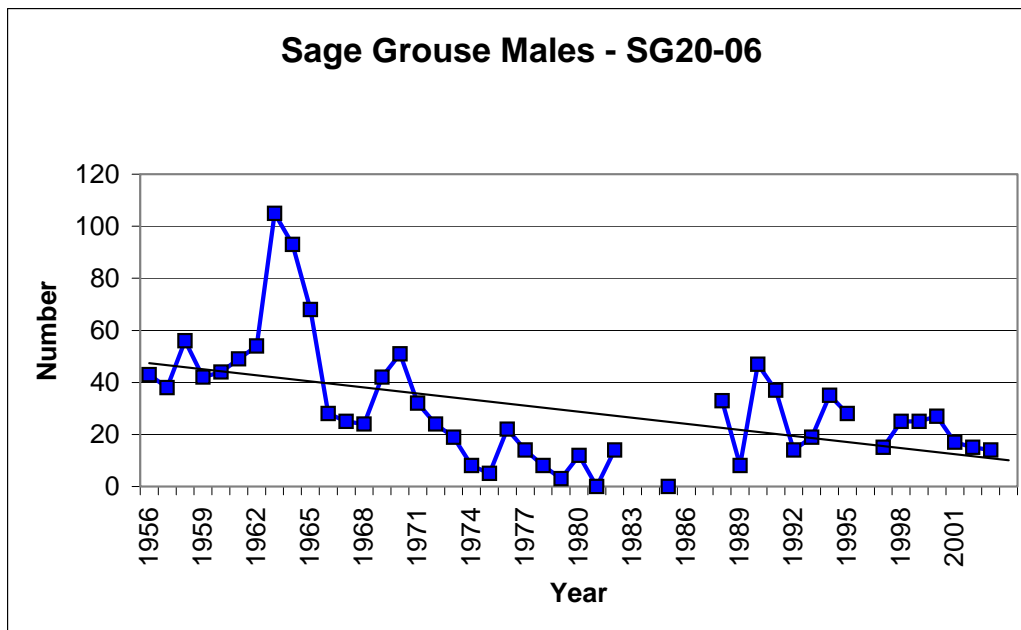
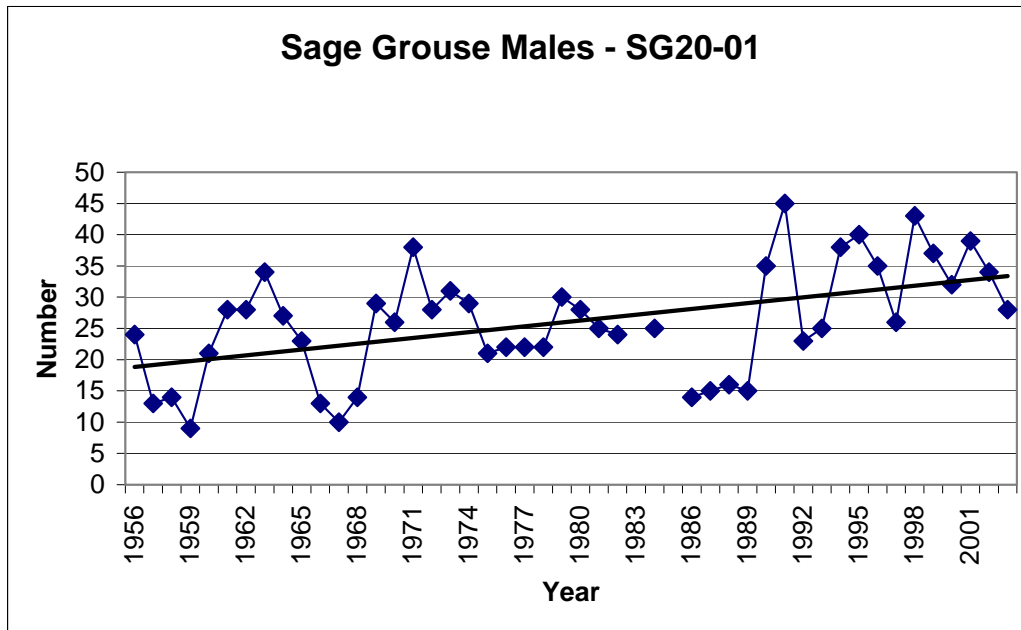


Figure 3. The graphs display the number of sage grouse birds for each year on 2 of the leks in the Antelope – Brazil Watershed.

Analysis

The wildlife habitat/biodiversity standard is being met overall in this watershed.

The wildlife species missing from the area that would have been present a couple of hundred years ago would be elk, bison, grizzly bear, and gray wolf. These species require extensive habitat to survive and to be tolerated now. There are no recommendations to actively reestablish these species.

The “Key Questions” to be considered are:

1) Sage grouse: Can sage grouse habitat in the big sagebrush and silver sagebrush be maintained or increased?

Most areas already have big sagebrush and silver sagebrush growing on areas where sagebrush will grow. Chisel plowing would increase the grass cover in some areas and increase the vigor of sagebrush if not heavily disturbed.

2) Fisheries: Is management of the existing fishing reservoir adequate?

There are reservoirs that appear to have adequate depth to maintain a fisheries and sedimentation is low. Low wintertime oxygen levels are of a concern to keep the fish alive, if fish were planted. An aerator was recently installed in Paulo Reservoir. Not enough time has gone by to determine if it was a success or not. A fence has been built to exclude livestock. Information on sensitive fish species is very limited.

3) Mountain plover: What is good mountain plover habitat? How can we manage for it or increase the amount of habitat?

The plover habitat in this watershed is naturally occurring, due to the soil types. The Brazil Creek Allotment (4553) contains mountain plover habitat, including the proposed Mountain Plover Area of Critical Environmental Concern..

4) Waterfowl: What management techniques and land treatments should be employed to enhance or maintain current habitat? Is nesting cover adequate?

The current waterfowl production is due mainly to the reservoirs that have been constructed. There is potential to create more waterfowl reservoirs in segments of the area. Water rights for new reservoirs could be a limiting factor in their construction. The best areas are out of the salt laden shales and next to the better-vegetated grasslands. These reservoirs would be either pair ponds or brood ponds depending upon what is missing. Management practices that would leave more residual grass cover in riparian areas and in the adjacent uplands would benefit species such as the mallard. Chisel plowing would increase the residual cover also.

5) Grassland birds: How do we find a balance to meet habitat requirements for species (especially special status species) that need a variety of habitats from very short vegetation to dense, tall cover? What is the effect of crested wheatgrass? Is the goal of 80% good to excellent ecological status appropriate for the wildlife species present?

This watershed has many allotments, the larger ones have had grazing management plans developed for them, while the smaller ones are in custodial management with much variability in the actual grazing that occurs. A variety of habitats results from the differing grazing intensity and times.

Based upon the visual observations of formerly cultivated fields that were seeded with crested wheatgrass over 60 years ago, crested wheatgrass is not aggressively advancing into the native prairie surrounding them. In this area a sensitive wildlife specie (Baird's sparrow) can be found in crested wheatgrass fields, especially where there is a mix of native species and shrubs along with the crested wheatgrass.

6) Prairie dogs: The black-tailed prairie dog has been added to the candidate list of endangered and threatened wildlife and plants. Does this watershed contain potential prairie dog habitat?

This area probably had prairie dog colonies in it during pre-settlement times, but there are no known records or evidence that they were there. There are areas on BLM-administered lands similar to the prairie dog town on state section. Much of the watershed would not be prairie dog habitat, but there is potential prairie dog habitat.

Recommendations

Though trial land treatments and research opportunities encourage the establishment and production of sagebrush on all sites with potential sage grouse habitat. Maintain a diverse forb community on sites that occur around brood rearing areas for sage grouse.

After the dam reconstruction is completed maintain a trickle of water out of VR-2 and down Brazil Creek to keep the riparian zone vigorous. Examine other reservoirs to determine if the possibility of other trickle systems is possible.

For increased waterfowl production it is recommended to build more reservoirs. Rest-rotation grazing systems are encouraged. If nesting cover is limited due

to clubmoss chisel plowing may be of benefit to increase grass cover.

Vary grazing pressure by interspersing areas of heavy, light, and non-grazing of livestock to provide habitat for a variety of grassland bird species.

If any chisel plowing projects are proposed consider the short grass bird species, by re-seeding native grasses. Before that occurs determine if McCowns longspurs are breeding there. Consider a prescribed burning program. Maintain grasslands free of woody vegetation.

Maintain existing crested wheatgrass stands to provide Baird sparrow habitat and cover for waterfowl.

Consider implementing a system of back-to-back rest of a pasture (2 years of rest), where this could be accomplished without over utilizing the remaining pastures.

Maintain exclosure fences around Paulo fishing reservoir. Work with Montana Fish, Wildlife & Parks on investigating reservoirs for fish stocking and surveying the prairie streams for fish species.

Habitats for threatened and endangered and special status species would be managed for recovery and protection.

On the mountain plover habitat maintain shorter vegetation by continuing the cattle grazing on the areas where the plovers are found.

There are no recommendations for prairie dog since there are none on BLM-administered lands.

Table 6. Recommendations to Address Wildlife Habitat/Biodiversity Standard

| Allotment Number and Name | Findings/Recommendations |
|----------------------------------|---|
| 4511 Kent Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4515 | Meeting the wildlife habitat/biodiversity standard; |
| 4517 Westfork Ash Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4518 Ash Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4520 McGregor Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4521 Upper Buffalo Coulee | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks during project planning |
| 4522 Buffalo Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4523 Lower Buffalo Coulee | Meeting the wildlife habitat/biodiversity standard; consider sage grouse nesting cover during project planning |
| 4524 Upper Hay Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4532 | Meeting the wildlife habitat/biodiversity standard; |
| 4533 Upper Antelope Creek | Meeting the wildlife habitat/biodiversity standard; consider grassland birds during project planning |
| 4534 Northfork Antelope | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks and sharp-tailed grouse leks during project planning |
| 4535 Southfork Antelope | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks during project planning |
| 4536 Truax Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4537 Lower Northfork Antelope | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks during project planning |
| 4538 Lower Hardscrabble | Meeting the wildlife habitat/biodiversity standard; maintain or develop habitat for waterfowl |
| 4539 Hardscrabble Creek | Meeting the wildlife habitat/biodiversity standard; |
| 4540 Hay Coulee | Meeting the wildlife habitat/biodiversity standard; consider sharp-tailed grouse leks during project planning |
| 4541 Lower Hay Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4542 Antelope Creek | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks during project planning |
| 4543 Lower Antelope Creek | Meeting the wildlife habitat/biodiversity standard; consider grassland birds during project planning |
| 4544 | Meeting the wildlife habitat/biodiversity standard; |
| 4545 Tampico Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4553 Brazil Creek | Meeting the wildlife habitat/biodiversity standard; maintain or develop habitat for mountain plover; consider sage grouse leks and sharp-tailed grouse leks during project planning |
| 4554 Lower Southfork Antelope | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks during project planning |
| 4555 Bullock Coulee | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks during project planning |
| 4556 Hay Fever | Meeting the wildlife habitat/biodiversity standard; |
| 4557 Second Brazil Creek | Meeting the wildlife habitat/biodiversity standard; consider sage grouse leks during project planning |
| 4558 Wirenet Corral | Meeting the wildlife habitat/biodiversity standard; maintain habitat for fish |
| 4559 | Meeting the wildlife habitat/biodiversity standard; |
| 4560 Lower Brazil Creek | Meeting the wildlife habitat/biodiversity standard; maintain or develop habitat for waterfowl; |
| 4561 Homestead | Meeting the wildlife habitat/biodiversity standard; |

| Table 6. Recommendations to Address Wildlife Habitat/Biodiversity Standard | |
|---|--|
| 4562 Little Brazil Creek | Meeting the wildlife habitat/biodiversity standard; |
| 4563 Coyote Creek | Meeting the wildlife habitat/biodiversity standard; maintain or develop habitat for waterfowl; consider sage grouse leks during project planning; maintain or develop habitat for prairie dogs |
| 4564 Alkali Coulee | Meeting the wildlife habitat/biodiversity standard; maintain or develop habitat for waterfowl; |
| 4565 Theofiel Coulee | Meeting the wildlife habitat/biodiversity standard; |
| 4566 | Meeting the wildlife habitat/biodiversity standard; |
| 4601 North Little Beaver | Meeting the wildlife habitat/biodiversity standard; |



Male sage grouse displaying his pride.



Female sage grouse caught in the light.

CULTURAL RESOURCES

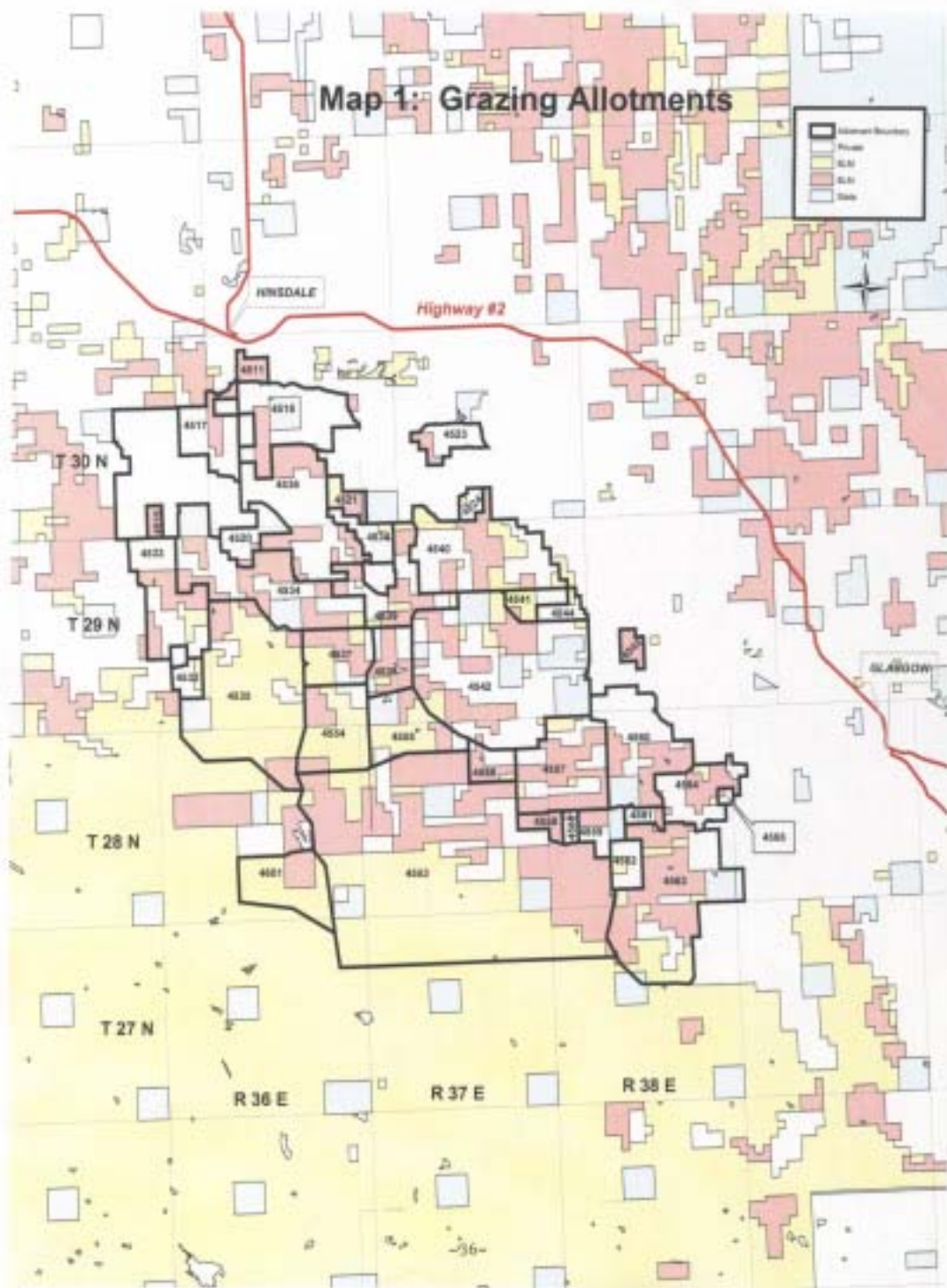
Cultural resources within the Brazil Creek watershed are varied and rich. Both prehistoric and historic cultural resources are located in the watershed. Prehistoric sites such as tipi ring campsites, tool manufacturing sites, drive-lines, cairns, and isolated debris scatters are found throughout areas in the Brazil Creek watershed. In addition historic sites consisting of homesteads, field-clearing stone piles, farming related machinery, and dumps are located there too.

One site was chosen to feature in this watershed, 24VL1762, an historic reservoir. Research was conducted on this site but no records were located to describe its origin. What is known was compiled from a book called “Golden Reflections of Bygone Days” written by Josephine Anderson, mother of local rancher Bill Anderson and from oral interviews of local people. In her book she talks about how her husband McKee Anderson was foreman over the construction of “Brazil Creek Dam”,

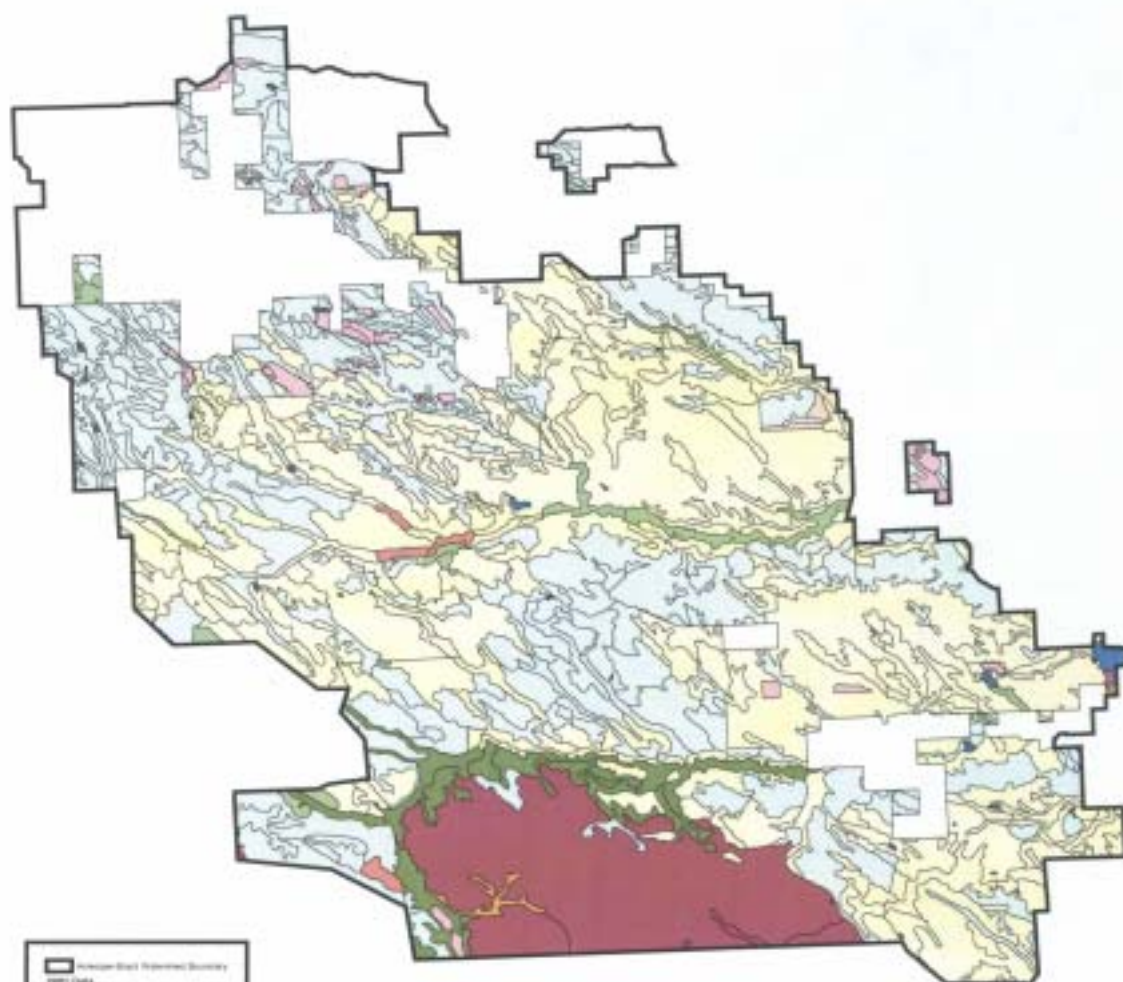
which is what it was called in the early days. She describes the difficulty working hard labor in the bitter cold. Workers would pile stones and drag them to the dam with horses and hand place the stones on the face of the dam. In all the reservoir took approximately two years to finish.

Over the years VR-2 has undergone a few “face lifts”, consisting of a fence to reduce erosion from waves crashing into the rock rip-rap. In the 1970s uncompacted dirt was dropped on the top of the embankment, which only aided in the breakdown of the fill by creating a steeper slope ratio and the unstable soils eventually began to crack. The embankment will undergo a rebuild beginning this year, 2003, to fix broken pipes, reestablish original slopes, and replace the rock rip-rap. The reservoir has survived since the thirties as an integral part of farming and ranching in the area and will last for many more years to come.

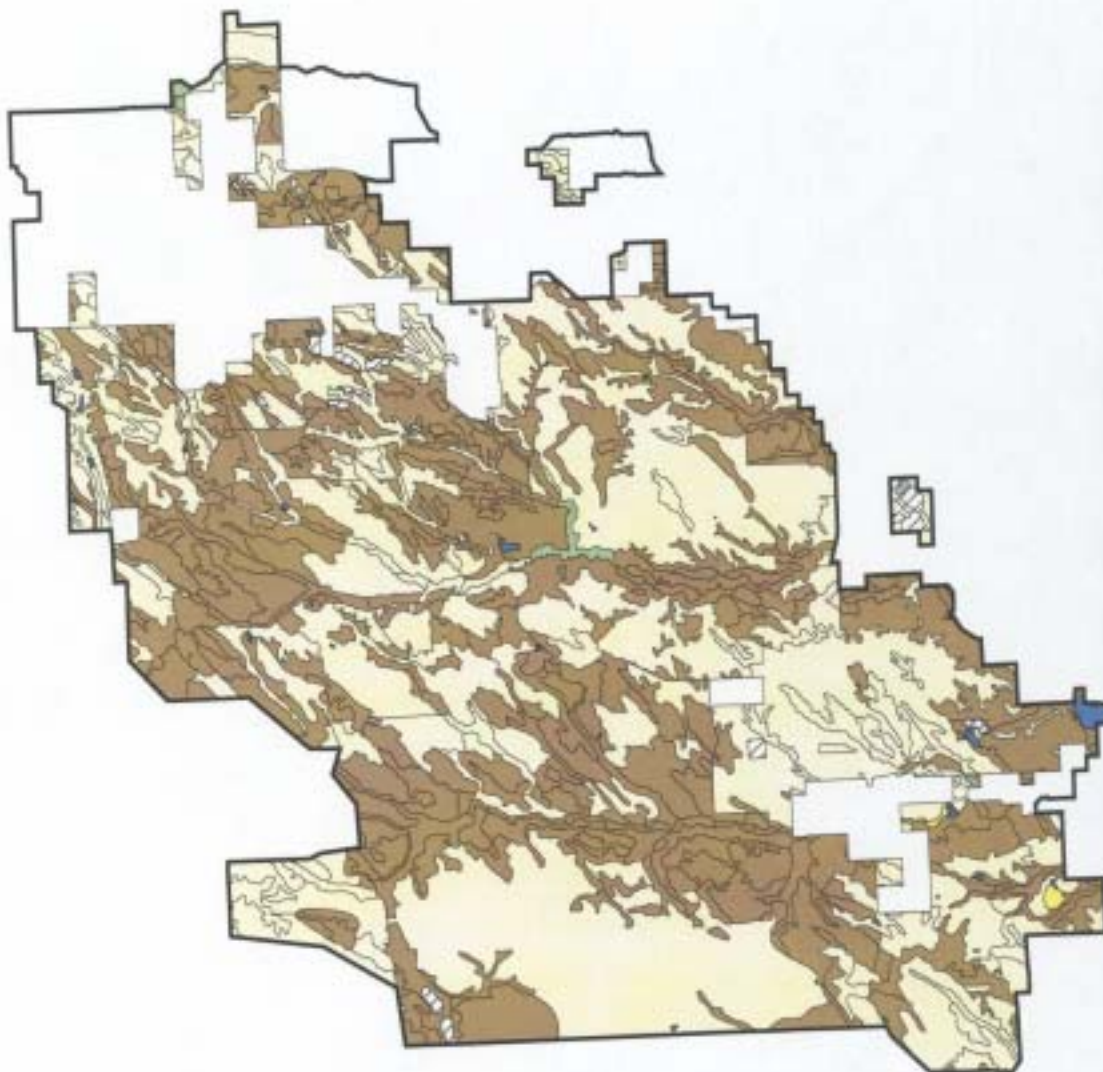
Map 1: Grazing Allotments



Map 2: Vegetation Type



Map 3: Seral Status



Map 4: Riparian Condition

